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REMARKS

Claims 20, 22-26, 28-43 are pending. By this Amendment, claims 20, 31 and 40-43 are amended to more particularly point out Applicants' claimed invention. In particular, claims 40-43 are amended for clarity, and there is no intention of narrowing claims 40-43 by the amendments. The amendment of claims 40-43 is supported by the specification, for example, at page 60, lines 25-30. The amendment of claim 20 is supported by the specification, for example, at page 8, lines 25-27, page 9, lines 18-28 and from page 24, line 18 to page 25, line 9. The amendment of claim 31 is supported in the specification, for example, at page 51, lines 27 to page 54, line 4 and Figs. 21-26. No new matter is introduced by the amendments.

All pending claims stand rejected. Applicants respectfully request reconsideration of the rejections based on the following analysis.

Rejection under 35 U.S.C. § 112, Second Paragraph

The Examiner rejected claims 42-43 under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner has noted that there was no antecedent basis for "the relative density" and that there was no indication what the density is relative to. Applicant thanks the Examiner for a careful reading of the claims. It is noted that the same issues applied also to claims 40 and 41. Applicants have corrected the antecedent basis problem with an amendment to refer to the coating. While Applicant believes that the relative density was clear in context, the claims have been amended to clarify that the relative density was relative to the mass of the fully densified material. In view of the clarifying amendments, Applicants respectfully request withdrawal of the rejection of claims 42 and 43 under 35 U.S.C. § 112, second paragraph, as being indefinite.

Rejection Over Schultz under 35 U.S.C. § 102

The Examiner rejected claim 20 under 35 U.S.C. § 102(e) as being anticipated by published U.S. Patent Application No. 2002/0056291 to Schultz et al. (Schultz). The Examiner pointed to paragraph 82 of Schultz to support the teaching of putting rare earth elements on an insert that is incorporated into a glass preform structure. Applicants have amended claim 20 to more particularly point out their claimed invention. In view of the amendment of claim 20, Schultz clearly does not teach all features of the claim, and Schultz does not prima facie anticipate Applicants' claimed invention. Applicants respectfully request reconsideration of the rejection based on the following comments.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Schultz does not disclose a coating of an oxide composition comprising a rare earth element. As such, since Schultz does not teach or suggest all of the limitations of claim 20, Schultz does not prima facie anticipate claim 20. Applicants respectfully request withdrawal of the rejection of claim 20 under 35 U.S.C. § 102(b) as being anticipated by Schultz.

Rejection Over Schultz Under 35 U.S.C. § 103(a)

The Examiner rejected claims 24-26 under 35 U.S.C. § 103(a) as being unpatentable over Schultz. Claims 24-26 depend from claim 20. Claim 20 has been amended to indicate that the coating comprises an oxide composition that comprises a rare earth element. Schultz does not teach or suggest a coating as presently claimed. Therefore, Schultz clearly does not render claim 20 or claims 24-26 *prima facie* obvious. Applicant respectfully requests withdrawal of the rejection of claims 24-26 under 35 U.S.C. § 103(a) as being unpatentable over Schultz.

Although Applicants do not acquiesce in the Examiner's position on the particular issues relating to the dependent claims, Applicants do not presently comment on the specific issues relating to the dependent claims since these issues are moot in view of the comments above.

Rejection Over Schultz in View of Kyoto Under 35 U.S.C. § 103(a)

The Examiner rejected claims 20 and 24-26 under 35 U.S.C. § 103(a) as being unpatentable over Schultz in view of U.S. Patent 4,664,690 to Kyoto et al. (Kyoto). The Examiner had cited Kyoto for teaching the particle sizes inherently within soot. However, Applicant has amended claim 20 to more particularly point out their claimed invention. As noted above, Schultz does not teach or suggest a coating comprising an **oxide** composition comprising a rare earth element. Similarly, Kyoto does not teach coating with the claimed compositions. Since the combined disclosures of Schultz and Kyoto do not teach all of Applicant's claim elements, the combined disclosures of Schultz and Kyoto do not render claims 20 and 24-26 *prima facie* obvious. Thus, Applicant respectfully requests withdrawal of the rejection of claims 20 and 24-26 under 35 U.S.C. § 103(a) as being unpatentable over Schultz in view of Kyoto. Although Applicants do not acquiesce in the Examiner's position on the particular issues relating to the dependent claims, Applicants do not presently comment on the specific issues relating to the dependent claims since these issues are moot in view of the comments above.

Rejection Over Schultz in View of Kyoto, Berkey and Kobayashi Under 35 U.S.C. § 103(a)

The Examiner rejected claims 20, 22-26 and 28-43 under 35 U.S.C. § 103(a) as being unpatentable over Schultz in view of Kyoto, U.S. Patent 4,684,384 to Berkey (Berkey) and U.S. Patent 3,957,474 to Kobayashi et al. (Kobayashi). The Examiner cited Berkey and Kobayashi as applied in earlier office actions. The Examiner asserted that the Schultz layer could be deposited with a laser since such deposition was a "known superior method of creating a soot layer."

Applicant has amended claims 20 and 31 to more particularly point out their claimed invention. In view of these amendments, Applicant asserts that the combined teachings of the cited references do not render Applicant's claims *prima facie* obvious. Applicant respectfully requests reconsideration of the rejection based on the following comments, which are divided based on the two independent claims.

With respect to claims 20, 22-26, 28-30 and 39-40, none of the cited references alone or combined teach a coating with an **oxide** composition comprising a rare earth element. Thus, since the combined disclosures of the references do not teach or suggest all of the features of claim 20, the combined disclosures do not render claims 20, 22-26, 28-30 and 39-40 *prima facie* obvious.

With respect to claims 31-38 and 41-43, claim 31 has been amended to clarify the orientation of the laser beam as shown in Applicant's specification. The Examiner asserted in the comments of the present Office Action that Applicant's previous claim language did not preclude a beam that passed between the reactant inlet and the insert for a portion of the optical path and not other portions of the optical path. Applicant thanks the Examiner for a clear exposition of the concerns regarding the claim language. With the clarification of the claim language, the cited references alone or combined do not teach or suggest a reactive deposition approach with a configuration of the laser beam to not contact the insert. Therefore, the combined disclosures of the cited references do not render Applicant's claimed invention *prima facie* obvious.

Since the combined teachings of the references do not render Applicant's claimed invention *prima facie* obvious, Applicant respectfully request withdrawal of the rejection of claims 20, 22-26 and 28-43 under 35 U.S.C. § 103(a) as being unpatentable over Schultz in view of Kyoto, Berkey and Kobayashi. Although Applicants do not acquiesce in the Examiner's

position on the particular issues relating to the dependent claims, Applicants do not presently comment on the specific issues relating to the dependent claims since these issues are moot in view of the comments above.

Rejection Over Hicks, Berkey and Kobayashi under 35 U.S.C. § 103(a)

The Examiner rejected claims 31-33, 38 and 42-43 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,749,396 to Hicks (Hicks) in view of Berkey and Kobayashi. The Examiner cited these references as disclosed in the previous Office Actions. In his remarks, the Examiner indicated that Applicant's previous claim language did not preclude an optical path with a portion of the optical path not being between the reactant inlet and the substrate. Applicant has clarified the position of the optical path. In view of the clarifying claim amendments, Applicant asserts that the combined teachings of the references do not render Applicant's claimed invention *prima facie* obvious. Applicant respectfully request reconsideration of the rejection based on the following comments.

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP § 2142 (citing In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

In view of the amendment of claim 31, Hicks does not teach or suggest a reaction to form a product stream driven by a light beam that is directed to not strike the substrate/insert. Also, none of the cited references teach or suggest an optical path between a reactant inlet nozzle and an insert

configured so that the laser does not strike the insert. In particular, the Kobayashi patent teaches away from the claimed invention since this patent teaches that the laser is directed at the mandrel/substrate and not oriented to avoid the substrate/insert. See, for example, all of the figures in Kobayashi and column 1, line 55 to column 2, lines 9. Since the references do not teach or suggest all of the claim elements and since the Kobayashi patent teaches away form the claimed invention, the combined teachings of the cited references do not render these claims *prima facie* obvious.

Since the combined teachings of the cited references do not render the claims *prima facie* obvious, Applicants respectfully request withdrawal of the rejection of claims 31-33, 38 and 42-43 under 35 U.S.C. § 103(a) as being unpatentable over the Hicks patent in view of the Berkey patent and the Kobayashi patent. Although Applicants do not acquiesce in the Examiner's position on the particular issues relating to the dependent claims, Applicants do not presently comment on the specific issues relating to the dependent claims since these issues are moot in view of the comments above.

Rejection Over Hicks, Miller, Berkey, and Kobayashi

The Examiner rejected claims 20, 22-26 and 28-43 under 35 U.S.C. § 103(b) as being unpatentable over Hicks in view of Berkey, Kobayashi and U.S. Patent 4,501,602 to Miller (Miller). The Examiner indicated that the general nature of the references was disclosed in the previous Office Actions. The Examiner particularly cited Miller for its teaching of rare earth dopants. However, Applicant has amended claims 20 and 31 to more particularly point out their claimed invention. Applicant asserts that the combined teachings of the references do not lead to Applicant's presently claimed invention. Thus, the combined teachings of the cited references do not render Applicant's invention *prima facie* obvious. Applicant respectfully requests reconsideration of the rejection based on the following comments.

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With respect to claims 20, 22-26, 28-30 and 39-41, the cited references alone or combined do not teach or suggest a coating compositions comprising "an oxide composition comprising $SiO_2$, a rare earth element and a second dopant comprising a metal element that is not a rare earth element." Since the combined disclosures do not teach or suggest all of the claim elements, the combined teachings of Hicks, Berkey, Kobayashi and Miller do not render Applicant's claimed invention *prima facie* obvious.

With respect to claims 31-38 and 42-43, the disclosures of the references alone or combined do not teach or suggest a method with a laser oriented not to strike the substrate/insert. Since the combined disclosures of the references do not teach or suggest all of the claim elements, the combined teachings of Hicks, Berkey, Kobayashi and Miller do not render Applicants' claimed invention *prima facie* obvious. Applicants respectfully request reconsideration of the rejection based on the following comments.

In view of the above comments, Applicant respectfully requests withdrawal of the rejection of claims 20, 22-26 and 28-43 under 35 U.S.C. § 103(b) as being unpatentable over Hicks in view of Berkey, Kobayashi and Miller. Although Applicants do not acquiesce in the Examiner's position on the particular issues relating to the dependent claims, Applicants do not presently comment on the specific issues relating to the dependent claims since these issues are moot in view of the comments above.

## CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

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